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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.
2a)☐ This action is **FINAL**.　　　2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.
　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-30* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *30 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.
　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
　　a)☐ All　b)☐ Some * c)☐ None of:
　　　1.☐ Certified copies of the priority documents have been received.
　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.
　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-30 are pending for examination.

Drawings

2.   The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim subject matter of claims 1, 9, 16 and 24 including first plurality of packet, second plurality of packets, first subset and second subset must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3.   Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   Claims 9-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

6.   Claims 9-15 are directed of scheduler claims, but appearing to be comprised of <u>software alone</u> without claiming associated <u>computer hardware</u> required for execution. For example, claim 9 recited a scheduler, a first queue, second queue and scheduling module, which are all software functions/ modules. Software alone is directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8.   Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

9.   As per claims 1, 9, 16 and 24, the subject matter is not described in the specification in

such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly

connected, to make and/or use the invention. Such as first plurality of packet, second plurality of

packet what does it consist of the whole first queue being copied or just a portion? Copying is

overriding old data or adding to old data? Does the first and second queue of same size or

different sizes?

10.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

11.   Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

      a.   The claim language in the following claims is not clearly understood:

            i.   As per claim 1, lines 3-4, it is not clearly understood the relation between

the first priority and the second priority? (i.e. which priority is highest?) Line 5, it

is not clearly understood what is the criteria of copying a first plurality of

packets? And does the copying selectively or for all packets? It is unclear

whether the priority plays any role in determining what to copy? And it is

uncertain what does the first plurality of packet represent to the first queue? (i.e.

does the first plurality of packets is a portion of the first queue or the whole

content of the queue?) Line 6, it is unclear what is the criteria of scheduling a first

subset of packets? (i.e. priority?) It is unclear how the subset is selected to be

scheduled? Line 7, it is not clearly understood whether the determination of whether the second queue include a packet of first priority taking to account the one that was scheduled of excluding the packets that was scheduled? Line 8, it is not clearly understood the relation between the first sunset and the second subset? And how the second subset is selected to schedule? It is uncertain how many subsets are there in the second queue? Line 10, it is not clearly understood whether the second copy is adding entries to the second queue or is it overriding the entries in the second queue? it is not clearly understood whether both queues of same sizes or different?

ii.   As per claim 9, it has similar limitation as claim 1, therefore it has the same deficiency as claim1.

iii.   As per claim 16, it has similar limitation as claim 1, therefore it has same deficiency as claim 1.

iv.   As per claim 24, it has similar limitation as claim 1, therefore it has same deficiency as claim 1.

v.   As per claim 2, line 1, it is unclear how many subset of packets in total are there to be scheduled?

vi.   As per claims 10, 18 and 25, they have same limitation as claim 2. therefore they have same deficiency as claim 2.

vii.   As per claim 4, lines 1-3, it is unclear how the subset of first and second packets are selected from the sub queues of the first queue? (i.e. weighted round robin?)

viii.   As per claims 12, 20 and 27, they have same limitation as claim 4. therefore they have same deficiency as claim 4.

ix.   As per claim 5, lines 3, which queue is it? (i.e. the first or the second queue).

x.   As per claims 13, 21 and 28, they have same limitation as claim 5. Therefore they have same deficiency as claim 5.

xi.   As per claim 6, line 1, it is not clearly understood what is considered a delay period? And what aspect is being delayed?

xii.   As per claim 14, 22 and 29, they have same limitation as claim 6. Therefore they have same deficiency as claim 6.

xiii.   As per claim 7, lines 1-3, it is not clearly understood how the delay period affecting the scheduling of the packets and what are we delaying? (i.e. delay of scheduling 1st priority?) and it is not clearly understood when does the delay period ends?

xiv.   As per claims 15, 23 and 30, they have same limitation as claim 7. therefore they have same deficiency as claim 7.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 1-2, 4-10, 12-18, 20-15 and 27-30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Sarkinen et al. (US 2003/0063562 A1) in view of Cohen et al. (US 4,807,111)

and further in view of shih et al (US6,615,223).

14.   As per claim1, Sarkinen teaches the invention substantially as claimed including a

method comprising:

         scheduling a first subset of packets from the second queue (par. [0018], lines 1-7; par.

[0019], lines 1-4; par. [0020], lines 1-5);

         determining whether the second queue includes a packet with the first priority (par.

[0016], lines 11-16; par. [0020], lines 1-5; par. [0058], lines 11-12; par. [0063], lines 2-8)

         if the second queue includes a packet with a first priority, scheduling a second

subset of packets from the second queue (par.[0016], lines 11-16; par. [0020], lines 1-5;

par.[0058], lines 11-12; par. [0063], lines 2-8)

15.   Sarkinen doesn't explicitly teach receiving packets of data in a first queue, each of the

packets having one of a plurality of priorities, the plurality of priorities including a first priority

and a second priority;

         copying a first plurality of packets from the first queue to a second queue; and

         if the second queue does not include a packet with the first priority, copying a

second plurality of packets from the first queue to the second queue.

16.   However, Cohen teaches receiving packets of data in a first queue, each of the packets

having one of a plurality of priorities, the plurality of priorities including a first priority and a

second priority (col. 6, lines 4-6);

copying a first plurality of packets from the first queue to a second queue (col. 6, lines 6-

11).

17.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine Sarkinen and Cohen because Cohen's teaching of copying a first plurality

of packets from the first queue to a second queue would improve Sarkinen system by always

checking on highest priority packets arriving and sorting them depending on their priority which

improve system performance and give more attention to highest priority packets.

18.   The combined teaching doesn't explicitly teach that if the second queue does not include

a packet with the first priority, copying a second plurality of packets from the first queue to the

second queue.

19.   However, Shih teaches that if the second queue does not include a packet with the first

priority, copying a second plurality of packets from the first queue to the second queue (col. 9,

lines 42-54; wherein certain specified trigger condition is the second queue does not include a

packet with the first priority).

20.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to conclude to combine Sarkinen, Cohen and Shih teaching that another copy is

performed of the first queue whenever, if the second queue doesn't include a first priority packet

would improve the system by having a balanced scheduling with different importance of job

scheduled.

21.   As per claim 2, Sarkinen teaches that each subset of packets scheduled from the second

queue includes one or more of packets of the first priority if the second queue contains packets of

the first priority and one or more packets of the second priority if the second queue contains

packets of the second priority (par. [0016], lines 1-16).

22.   As per claim 4, Sarkinen teaches that the first queue and the second queue each contain a

plurality of sub-queues, each of the plurality of sub-queues representing one of the plurality of

priority levels (par.[0061]; par.[0063]).

23.   As per claim 5, Sarkinen teaches that determining whether the second queue contains one

or more packets of the first priority after copying the second plurality of packets into the queue

(par. [0018], lines 1-9; par. [0020], lines 1-8).

24.   As per claim 6, Sarkinen teaches commencing a delay period if the second queue does

not contain one or more packets of the first priority after copying the second plurality of packets

into the second queue (par. [0015], lines 7-13; par.[0021]; par.[0064], lines 1-10; par.[0067]) .

25.   As per claim 7, Sarkinen teaches continuing scheduling of packets after a determination

that there are no packets of the first priority in the second queue if the delay period is active (par.

[0015], lines 7-13; par.[0021]; par.[0064], lines 1-10; par.[0067]).

26.   As per claim 8, Sarkinen teaches commencing the delay period comprises starting a timer

(par. [0015], lines 7-13; par.[0021]; par.[0064], lines 1-10; par.[0067]).

27.   As per claim 9, Sarkinen teaches a scheduler comprising:

        scheduling module, the scheduling module to schedule packets from the second

queue(fig. 2, 220, 221; fig. 7, 510; fig. 8, 620);

        the scheduler to determine whether the second queue contains packets of the first

priority(par. [0016], lines 11-16; par. [0020], lines 1-5; par. [0058], lines 11-12; par. [0063], lines

2-8).

28.   Sarkinen doesn't explicitly teach a first queue, the first queue to receive packets of data,

each packet of data having one of a plurality of different priority levels, the plurality of different

priority levels including a first priority;

        a second queue, the second queue to contain packets copied from the first queue;

        the scheduler to copy packets from the first queue to the second queue; and

        if there are no packets of the first priority to copy additional packets from the first queue

to the second queue.

29.   However, Cohen teaches a first queue, the first queue to receive packets of data, each

packet of data having one of a plurality of different priority levels, the plurality of different

priority levels including a first priority(col. 6, lines 4-6);

        a second queue, the second queue to contain packets copied from the first queue(col. 6,

lines 4-11);

        the scheduler to copy packets from the first queue to the second queue(col. 6, lines 6-11).

30.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine Sarkinen and Cohen because Cohen's teaching of copying a first plurality

of packets from the first queue to a second queue would improve Sarkinen system by always

checking on highest priority packets arriving and sorting them depending on their priority which

improve system performance and give more attention to highest priority packets.

31.   The combined teaching doesn't explicitly teach that if there are no packets of the first

priority to copy additional packets from the first queue to the second queue.

32.   However, Shih teaches that if there are no packets of the first priority to copy additional

packets from the first queue to the second queue (col. 9, lines 42-54; wherein certain specified

trigger condition is the absence of a packet with the first priority).

33.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to conclude to combine Sarkinen, Cohen and Shih teaching that another copy is

performed of the first queue whenever, there is no first priority packet would improve the system

by having a balanced scheduling with different importance of job scheduled.

34.   As per claims 10 and 12-15, they are the scheduler claims of the method claims 2 and 4-7

respectively. Therefore they are rejected under the same rational.

35.   As per claim 16, Sarkinen teaches a system comprising:

        a memory (fig. 2, 232); and

        a scheduler, the scheduler to receive data from the memory (fig. 2, 220, 221), the

scheduler

comprising:

        a scheduling module, the scheduling module to schedule packets from the

second queue (fig. 7, 510; fig. 8, 620);

        the scheduler to determine whether the second queue contains packets of the first priority

(par. [0016], lines 11-16; par. [0020], lines 1-5; par. [0058], lines 11-12; par. [0063], lines 2-8).

36.   Sarkinen doesn't explicitly teach that a first queue, the first queue to receive packets of

data, each packet of data having one of a plurality of different priority levels, the plurality of

different priority levels including a first priority;

        a second queue, the second queue to contain packets copied from the first queue; and

the scheduler to copy packets from the first queue to the second queue;

if there are no packets of the first priority to copy additional packets from the first queue

to the second queue .

37.   However, Cohen teaches a first queue, the first queue to receive packets of data, each

packet of data having one of a plurality of different priority levels, the plurality of

different priority levels including a first priority (col. 6, lines 4-6);

a second queue, the second queue to contain packets copied from the first queue (col. 6,

lines 4-11); and

the scheduler to copy packets from the first queue to the second queue (col. 6, lines 6-11);

38.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine Sarkinen and Cohen because Cohen's teaching of copying a first plurality

of packets from the first queue to a second queue would improve Sarkinen system by always

checking on highest priority packets arriving and sorting them depending on their priority which

improve system performance and give more attention to highest priority packets.

39.   The combined teaching doesn't explicitly teach that if there are no packets of the first

priority to copy additional packets from the first queue to the second queue.

40.   However, Shih teaches that if there are no packets of the first priority to copy additional

packets from the first queue to the second queue. (col. 9, lines 42-54; wherein certain specified

trigger condition is the absence of a packet with the first priority).

41.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to conclude to combine Sarkinen, Cohen and Shih teaching that another copy is

performed of the first queue whenever, there is no first priority packet would improve the system

by having a balanced scheduling with different importance of job scheduled.

42.   As per claim 17, Sarkinen teaches a processor and a bus, the processor and memory being

coupled with the bus (fig. 2; par. [0042]; par. 0043; par.[0044]).

43.   As per claims 18-23, they are the system claim of the scheduler claims 10-15

respectively. Therefore it is rejected under the same rational.

44.   As per claim 24, Sarkinen teaches a machine-readable medium having stored thereon

data representing sequences of instructions that, when executed by a processor, cause the

processor to perform operations comprising:

        scheduling a first subset of packets from the second queue (par. [0018], lines 1-7;

par. [0019], lines 1-4; par. [0020], lines 1-5);

        determining whether the second queue includes a packet with the first priority

(par.[0016], lines 11-16; par. [0020], lines 1-5; par.[0058], lines 11-12; par. [0063], lines 2-8);

        if the second queue includes a packet with a first priority, scheduling a second

subset of packets from the second queue (par.[0016], lines 11-16; par. [0020], lines 1-5;

par.[0058], lines 11-12; par. [0063], lines 2-8)

45.   Sarkinen doesn't explicitly teach receiving packets of data in a first queue, each of the

packets having one of a plurality of priorities, the plurality of priorities including a first priority

and a second priority;

        copying a first plurality of packets from the first queue to a second queue; and

        if the second queue does not include a packet with the first priority, copying a

second plurality of packets from the first queue to the second queue.

46.   However, Cohen teaches receiving packets of data in a first queue, each of the packets

having one of a plurality of priorities, the plurality of priorities including a first priority and a

second priority (col. 6, lines 4-6);

        copying a first plurality of packets from the first queue to a second queue (col. 6, lines 6-

11);

47.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine Sarkinen and Cohen because Cohen's teaching of copying a first plurality

of packets from the first queue to a second queue would improve Sarkinen system by always

checking on highest priority packets arriving and sorting them depending on their priority which

improve system performance and give more attention to highest priority packets.

48.   The combined teaching doesn't explicitly teach that if the second queue does not include

a packet with the first priority, copying a second plurality of packets from the first queue to the

second queue.

49.   However, Shih teaches that if the second queue does not include a packet with the first

priority, copying a second plurality of packets from the first queue to the second queue (col. 9,

lines 42-54; wherein certain specified trigger condition is the second queue does not include a

packet with the first priority).

50.   It would have been obvious to one of ordinary skill in the art at the time the invention

was made to conclude to combine Sarkinen, Cohen and Shih teaching that another copy is

performed of the first queue whenever, if the second queue doesn't include a first priority packet

would improve the system by having a balanced scheduling with different importance of job

scheduled.

51.   As per claims 25 and 27-30, they are the medium claims of the method claims 2 and 4-7

respectively. Therefore they are rejected under the same rational.

52.   Claims 3, 11, 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sarkinen et al. (US 2003/0063562 A1) in view of Cohen et al. (US 4,807,111) and further in

view of shih et al (US6,615,223) and in view of Hoffman (US 6,940,814 B1).

53.   As per claim 3, the combined teaching doesn't explicitly teach that packets are scheduled according to a weighted round robin scheduling (Sarkinen: par.[0016]).

54.   However, Hoffman teaches that packets are scheduled according to a weighted round robin scheduling (abs., lines 11-15).

55.   It would have been obvious to combine Sarkinen, Cohen, Shih and Hoffman because Hoffman teaching of weighted round robin scheduling improve the efficiency of the system scheduling and performance by giving a fair share for all priority levels to be scheduled depending on their weight.

56.   As per claim 11, it is the scheduler claim of the method claim 3. Therefore it is rejected under the same rational.

57.   As per claim 19, it is the system claim of the method claim 3. Therefore it is rejected under the same rational.

58.   As per claim 26, it is the medium claim of the method claim 3. Therefore it is rejected under the same rational.

Conclusion

59.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

US 6272109 B1 teaches Hierarchical schedules for different ATM traffic.

US 5592671 teaches Resource management system and method.

US 20040010612 A1 teaches High performance IP processor using RDMA.

US 20030133457 A1 teaches Packet scheduling method and apparatus for downlink transmission

to mobile terminals.

US 20030112817 A1 teaches Methods and apparatus for differentiated services over a packet-

based network.

US 5574933 A teaches Task flow computer architecture.

US 5287346 A teaches Packet switch.

US 5815659 A teaches Network data server for use with programmable logic controllers and

programmable logic controller system formed using such network data servers.

US 20040085977 A1 teaches Method, system, and program for processing data packets in packet

buffers.

US 6185613 B1 teaches System and method for global event notification and delivery in a

distributed computing environment.

US 6292492 B1 teaches Efficient method and apparatus for allocating memory space used for

buffering cells received on several connections in an asynchronous transfer mode (ATM) switch.

60.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to CAROLINE ARCOS whose telephone number is (571)270-3151.

The examiner can normally be reached on Monday-Thursday 7:00 AM to 5:30 PM.

61.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

62.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                                /Caroline Arcos/
                                                Examiner, Art Unit 2195

/Li B. Zhen/
Primary Examiner, Art Unit 2194